

## Motion Sickness: It's All In Your Head

### Shazam!

Lesson 1 of 2

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**Grade Level:** K-4

**Subjects:** Space Science, Problem Solving

**Prep Time:** < 10 minutes

**Activity Duration:** Two class periods

**Materials Category:** General classroom

National Education Standards				
Science	Mathematics	Technology		Geography
		ISTA	ITEA	
2a, 4c	14b			

**Objective:** Students will imagine they are astronaut trainees and do “astronaut” tests that would help them function if they became dizzy or got motion sickness.

### Materials:

For the whole class:

- Set of large number cards marked 1, 2, and 3
- 3 rulers
- Shazam data sheet
- Pencil

### Related Links:

*NASA Site used for derivation of Lesson Plan*

Shazam

<http://stellar.arc.nasa.gov/stellar/Activities/astronaut/shazam/Shazam.html>

Office of Human Spaceflight – ISS Information

<http://spaceflight.nasa.gov/station/index.html>

Space Motion Sickness

[http://ccf.arc.nasa.gov/dx/archives/ames\\_history/sms.html](http://ccf.arc.nasa.gov/dx/archives/ames_history/sms.html)



### Shazam!

#### Teacher Sheet

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### Objective

Students will imagine they are astronaut trainees and do “astronaut” tests that would help them function if they became dizzy or got motion sickness.

### Materials

For the whole class:

- Set of large number cards marked 1, 2, and 3

For each group of 6 students:

- 3 rulers
- Shazam data sheet
- Pencil

### Background

Tests are used by NASA researchers to assess an astronaut’s response time. There are a lot of stresses that could decrease astronaut’s response time. Because so many astronauts experience motion sickness, researchers are focusing on this area. The researchers are looking to reduce the negative impacts of motion sickness. It takes a lot of training and discipline for astronauts to overcome motion sickness. Fortunately, the researchers at NASA are providing tools to help the astronauts fight off the effects of motion sickness and still be able to respond quickly to any situation that arises in space flight.

### Guidelines

1. Discuss the article “Motion Sickness” from NASAexplores.

Ask the question:

*Why would astronauts need to respond quickly and accurately when asked to do so?*

Answers will vary.

2. Demonstrate a response time test. Ask a student to hold a ruler at the top (make sure 0 is at the bottom). Hold your hand as if about to grasp at the bottom edge of ruler. Ask the student to let go whenever they are ready. Tell the class you will try to catch the ruler as quickly as you can. Conduct the test. Read the number on the meter stick that is just below the bottom edge of your hand. This number gives you an indication of how quickly you responded.
3. Demonstrate using number cards. Ask three students to stand in front of the class, assign them a number 1, 2, and 3. Three more students come up and face the first three, so they can not see the class. The three students facing the class hold the rulers. The other three get ready to grab the rulers. When all are ready, flash one of the three number cards for 3 seconds so the students holding the meter sticks can see the card. After the card is held up for 3 seconds shout “Shazam!” The student with the corresponding number releases their ruler. The test subject must catch the ruler as



fast as they can. Explain that their number will be recorded after each card is flashed. The number cards will be shown in random order, so they have to be ready.

4. Explain that astronauts have to stay calm and control their breath rate and heart rate to keep their stress level down. Tell students they need to try and do the same.
5. Divide the class into teams of six. Each team will have three test subjects and three ruler droppers. Pass out the data sheets, pencils, and rulers. Remind the students to stay focused. Flash the number cards randomly allowing time for students to record response times.
6. Allow each number to be flashed three times and switch roles.
7. Ask the students:  
*Did your response time decrease as you tried the test several times? Yes or No*  
*What do you think is the best way to reduce your response time? Answers will vary.*
8. Add stress to the test. Have the test subjects spin around 5 times and then be ready to catch the ruler. Record the results.

### **Discussion/Wrap-Up**

- Ask the students:  
*How did the stress of spinning affect the astronaut performance? Answers will vary.*
- Explain that since many astronauts get motion sickness during the first few days of space flight, research at NASA is helping astronauts minimize the affects of motion sickness.

### **Extensions**

- Continue the test by brainstorming more stresses to add, such as calling a name repeatedly, running in place for 20 seconds, or done first thing in the morning.
- Write a story about an astronaut reacting to motion sickness and describe how they would try to control it.



**Shazam!**

*Student Sheet*

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**What Is Your Reaction Time?**

Record the highest number showing below your hand on the ruler:

	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Trial 6
Student #1 Name						
Student #2 Name						
Student #3 Name						
Student #4 Name						
Student #5 Name						
Student #6 Name						

